

### CLAIM STATUS

Claims 1-10, 12, 13 and 15 remain canceled, while previously presented claims 11-14 and 16-27 remain pending and unchanged.

## REMARKS

The undersigned attorney, William A. Blakc, would like to thank the Examiner, Kennedy Schaetzle, for the courtesy shown in granting and conducting the telephone interview of April 3, 2009, during which the latest rejections of the claims over US Patent No. 4,060,079 to Reinhold, Jr. (hereinafter, "Reinhold") and the other references of record were discussed. For the record, Mr. Blake asserted that Reinhold's cumbersome apparatus could not possibly be easily carried by a single hand as recited in claim 11 of the subject application because of the disclosed weight and size of Reinhold's apparatus. Mr. Blake noted first that the combined weight of Reinhold's litter and oxygen tanks, estimated to be upwards of 80 pounds, could not be "easily" carried by the single hand of any person, regardless of stature and strength. Mr. Blake also noted that the 42 inch height of Reinhold's apparatus would make it even more difficult for a person to lift the system loaded with oxygen tanks at the location of the handle 26 because it would require the person to lift it with their arm at shoulder height. Examiner Schaetzle disagreed and stated that one did not have to lift the apparatus at the handle, but could lift it from the side using the frame. Mr. Schaetzle also asserted that the size and weight limitations were rather subjective and that an individual in good physical shape, such as a paramedic, would likely be capable of lifting the Reinhold system especially in view of the teachings of the reference suggesting that such an action was possible.

As will be clearly established herein, Applicants respectfully submit that the Examiner's position is erroneous and is largely the result of a number of oversights regarding what is actually disclosed in Reinhold. For the record, in the previous Office Action of June 13, 2008, which the Examiner made final, the Examiner maintained the rejections of the claims as being obvious under 35 U.S.C. 103 over Andrews et al. As a result of the Response filed on October

20, 2008 and as acknowledged in the present Office Action, Applicants convinced the Examiner that the rejection of the claims over Andrews et al. was in fact in error. Accordingly, Examiner Schaetzle indicates in the present Office Action that rejection has been withdrawn. Now, however, the Examiner has issued yet another rejection of the claims under 35 U.S.C. 103, which Applicants will establish is also in error and should be withdrawn for much the same reasons that the rejection over Andrews was in error. In short, once again the Examiner is attempting to render the claims of the subject reissue application obvious by relying on prior art that is intended for a completely different primary purpose (in the case of Reinhold, chest compression resuscitation and transport of a patient on a litter by 2 people). The apparatus thus includes structure that cannot be left out without defeating the purpose of Reinhold's device, yet which clearly makes Reinhold's device too heavy and cumbersome to be easily carried by a single hand.

With specific reference to the rejections set forth in the latest Office Action, claims 11, 14, 16-21 and 23-26 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Reinhold in view of Hood et al. (US Patent No. 5,975,081). In addition, claims 22 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reinhold and Hood et al. in view of Dudley (US Patent No. 3,905,363) or Sundblom et al. (US Patent No. 3,820,566). The reasons these rejections are in error follow a brief summary of the key features of the claimed invention.

As has already been discussed in the previously filed responses, the claimed invention is directed to an emergency medical system of a size and weight that can be easily carried with a single hand and includes: a breathable oxygen delivery system; a defibrillator for patient electro-cardio treatment; and, at least one measurement system for measuring a blood or gas parameter of the patient. A number of other adjuncts can be included as set forth in the dependent claims.

The purpose of the invention is to provide a convenient easily transported unit for emergency medical and lay first-aid responders, which provides the multiple functions of an emergency medical oxygen delivery system, a defibrillator and device(s) for patient diagnosis and/or monitoring. The unit can be easily carried with a single hand by emergency responders to the victim or patient at an accident scene, for example, up and down stairs, maneuvering around tight corners, easily in and out of transport vehicles, up and down hills in various terrains in the field, and avoids the need to collect and carry multiple separate pieces of equipment which is inconvenient and would likely necessitate use of both hands. As a result, the device enables a person carrying the same to have their other hand functionally free for other purposes, such as carrying other equipment, gripping a handrail, opening doors, providing assistance, or even self-defense, for example.

The following excerpt from the originally issued subject patent (US Patent No. 6,327,497, column 2, lines 47-54) clearly establishes that the claimed invention is designed to be easily carried by a single hand:

“Handle 40 provides a means for carrying the unit to a victim or patient. This allows the user to have a free hand for other equipment, handling a patient or other important tasks. Moreover, with multiple pieces of equipment housed in the same unit, the user needs to only look at the face of the unit to view the various displays for the different systems.

Thus, consolidating multiple medical devices into one unit provides easier handling and convenience for the user.”

As will be established below, the rejection of claim 11 and the various dependent claims over Reinhold in view of Hood et al. is clearly in error because the combination of teachings in Reinhold and Hood does not establish a *prima facie* case of obviousness as to claim 11 or any of the claims dependent thereon. As a result, the US Supreme Court ruling in *KSR International Co. v. Teleflex Inc.*, 127 S. Ct. 172, 782 USPQ2d 1385, 1396 (2007) (hereinafter “KSR”) is not

applicable to the present case. This is because KSR did not alter the fundamental well established requirement that a *prima facie* case of obviousness must be established by the Examiner. The combination of Reinhold in view of Hood et al. clearly does not establish a *prima facie* case of obviousness as to any of the claims because Reinhold does not disclose or suggest the key feature of the invention, which is the provision of an emergency breathable oxygen delivery system, defibrillator and at least one measuring device which are contained within a unitary housing of a size and weight that is *easily carried by a single hand*. More importantly and contrary to the assertions made by the examiner, Reinhold's device cannot be easily carried by a single hand.

With specific reference to Reinhold's disclosure, the assertion that Reinhold's litter, when collapsed with the disclosed oxygen cylinders in place, could be easily carried by a single hand is untenable. As recited in column 7, lines 5-43 of Reinhold, the litter collapsed, alone, without the two oxygen cylinders weighs "less than 50 pounds." The actual weight is not specified, but one can infer that it would be on the order of 40 pounds or more or else the device would not be rugged enough to be able to support a patient during resuscitation with the preferred chest compression device. Reinhold also specifies that the oxygen cylinders are so-called "E cylinders" which are well known to each weigh about 15 pounds full (6.8 kg.- see e.g., [http://openanesthesia.org/index.php?title=Cylinder\\_content:\\_weight\\_vs.\\_pressure](http://openanesthesia.org/index.php?title=Cylinder_content:_weight_vs._pressure), copy attached as Exhibit A). Thus, the actual weight of Reinhold's device with the oxygen cylinders would be on the order of at least 70 or more pounds. Even Reinhold must have known that the fully laden device would weigh too much for someone to be able to carry with the handle 26, so Reinhold added the caster wheels 116 which enable a user to pull the device with the handle 26. This makes more sense anyway for the handle 26 is at the long end of Reinhold's device, which at 42

inches, would require a person to lift the device to at least shoulder level as Mr. Blake pointed out during the telephone interview. The fact is that Reinhold never once suggests that a user pick up his invention using a single hand. Further, even if the user picked up the device using the side of the device as Examiner Schaetzle asserted during the interview, this still would not make the 70+ pound Reinhold device “easily carried by a single hand” as required by claim 11.

To provide further support for Applicants’ position, the US Occupational Safety Health Administration (OSHA) has implemented standards regarding the maximum permissible weight that workers in various industries are permitted to handle manually. OSHA’s website includes a page ([http://www.osha.gov/SLTC/etools/baggagehandling/baggage\\_makeup.html](http://www.osha.gov/SLTC/etools/baggagehandling/baggage_makeup.html), copy attached as Exhibit B), for example, which discloses safe baggage handling techniques for use by airlines. Note in Figure 5 of the webpage, that the use of tags indicating when objects are considered “heavy” is recommended with a yellow (i.e. caution) tag being recommended for 50 pound loads and a red (i.e. danger) tag being recommended for 70 pound loads. These heavy weight distinctions are actual restrictions imposed on passenger luggage by airlines for protection of baggage handler employees (see, e.g. American Airlines webpage <http://www.aa.com/aa/i18nForward.do?p=/travelInformation/baggage/baggageAllowance.jsp> copy attached as Exhibit C). Note these loads are considered heavy even for pick up by two hands or even two people using both hands. Further note there is no suggestion at OSHA’s website that such loads be picked up by a single hand let alone carried any distance by a single hand. There is also a notable consensus of many papers and guidelines that set forth results of studies that conclude maximum allowable lifting weights under optimal conditions utilizing two hands are about 55 pounds for men and 44 pounds for women. These standards are the ISO (International Standard Organization), the MMH (Manual Materials Handling), and NIOSH

(National Institute of Occupational Safety and Health) Standards and are summarized at the following webpage, a copy of which is attached as Exhibit D ([http://www.preventex.qc.ca/documentation/en/Vol21\\_1A.pdf](http://www.preventex.qc.ca/documentation/en/Vol21_1A.pdf)). These do not apply to single hand maximum limitations, but one can assume that it would be more than logical to simply halve the limits, thus about 27 pounds for men and 22 pounds for women would be the maximum limits for lifting an object with a single hand, but this would also imply that what is "easily carried by a single hand" would be notably less than these maximum limits. Further note that Exhibit C also indicates a 40 pound maximum on carry-on luggage, which by public consensus almost always includes an extended handle and wheels for ease of pulling, not carrying, similar to the provisions included by Reinhold.

On another note, the suggestion by the Examiner that the users of the claimed device would arguably be stronger and more fit than the average person is not supported by any evidence of record or any of which Applicants are aware. Applicants respectfully submit that it is more probable that the range of strengths and fitness levels of the users would be as varied as that of the general population, in fact. In any event, Reinhold's disclosure certainly does not contain any such assertions and actually teaches away from such assertions by providing the caster wheels 116. In other words, the mere existence of the two caster load-bearing wheels 116 is effectively an admission that the litter in the collapsed position is too heavy and cumbersome to be "easily carried by a single hand". As another aside, one might contend that Reinhold's apparatus would be easier to transport without the oxygen cylinders, but in that case, Reinhold would no longer disclose a crucial element of claim 11, a breathable oxygen delivery system, that is also factored into the size and weight of the device as recited and thus for this reason also, could not establish a *prima facie* case of obviousness as to claim 11. Reinhold's collapsible litter

may have been more "manually" transportable in various terrain than a "stretcher" over which it was a described improvement, but it certainly would never be considered easy for one person with a single hand to carry, which would then functionally leave the other hand free for carrying other equipment, gripping a handrail, opening doors, providing assistance, or even self-defense, for example and as previously noted.

Although Reinhold discloses a handle for an attendant to manually carry the invention, other than the handle itself, he never mentions "easily", "convenient" nor any reference to a "single hand" carry, nor the functional freedom of the other hand to perform necessary tasks, much less how a single hand alone could carry a device of such large size and weight. Applicants respectfully submit in fact that Reinhold's mentioning of the weight of the device be less than 50 pounds *without* the oxygen cylinders suggests that it was never intended that the litter of Reinhold be transported any distance by one person without benefit of the caster wheels 116. The bottom line is, in order to make a litter normally carried by two persons portable enough to be transported by one person, Reinhold essentially made the litter foldable so one person could either pull the folded litter by the hand on the weight-bearing caster wheels, or carry the litter with much effort and most certainly using both hands. In contrast, the claimed invention is designed to be easily carried by a single hand with the latest embodiment of the invention weighing only 8 pounds. A functional purpose of this is to let the user's other hand be free to perform other necessary maneuvers as already noted. Clearly even if an inordinately strong individual were able to carry the fully laden Reinhold device with a single hand, this would not be an easy maneuver by any stretch of the imagination and their other hand would more than likely be busy trying to counter balance the load for example and would not be free to do other things.



One further point should be noted. The subject reissue application has an effective filing date that goes back almost 11 years to September 11, 1998, which is the filing date of the original application, USAN 09/151,300 that subsequently issued as US Patent No. 6,327,497. As such, because MPEP§2142 states that "...the examiner must step backward in time..." Applicants note that it is illuminating that in the Office Action of March 21, 2001 during prosecution of the '300 application, at a time much closer to the time of the subject invention (2½ years then vs. almost 11 years now), the previously relied upon reference to Andrews was specifically noted as not rendering the broad claims therein unpatentable. The specific statement, made by Examiner Schaetzle, who is the Examiner of record in the subject application, reads as follows:

"...There is no teaching in the prior art of record for combining a defibrillator with a breathable oxygen delivery system in a unitary, hand-held, portable housing. Andrews et al. shows the two systems employed in a single portable unit, but the device is not considered to be hand-held in view of the applicants comments (the examiner will consider the term *hand-held* to be to be limited to devices of a size and weight which can easily be carried by a single hand)...". (Office Action of March 21, 2001, page 4)

Applicants asserted in the last Response of October 20, 2008 that the foregoing analysis was still correct and could also apply to the claims currently under examination with respect to Andrews et al. because the pending claims are similar to the claims allowed in the parent '497 patent and in Reissue Patent No. 38,533. Applicants further asserted that more than 7 years had passed at that time since Examiner Schaetzle made the above statement and that the passage of that much time can only serve to make it even more difficult to step back in time as required by MPEP§2142, which was certainly easier more than 7 years earlier. Applicants respectfully submit that the same assertions can be made with respect to Reinhold. No one in 1998 having the teachings of Reinhold before them would think to try to make the device small and light enough

to be easily carried by a single hand. As for the infamous 2007 KSR case, while this case has admittedly changed the law of obviousness, the changes do not impact the present case where a *prima facie* case of obviousness is not established by the combination of teachings of the references. The bottom line is that in 1998 when the subject application was filed, no one thought of putting a defibrillator, oxygen and measurement system in a single hand carriable casing. Examiner Schaetzle has repeatedly made attempts to show that the claimed invention would be obvious in view of some cumbersome apparatus such as disclosed in the previously relied upon Andrews reference, now admitted to be in error, and now as disclosed in the similarly flawed Reinhold reference.

In view of the foregoing, Applicants respectfully submit that the original concept of combining the recited elements in a single housing that is easily carried by a single hand is clearly nonobvious and patentable over the prior art of record. The very fact that the Examiner has repeatedly relied upon references that disclose the use of additional bulky components is clear evidence in and of itself that one of ordinary skill in the art in 1998 would not have thought of combining the specific elements recited in claim 11 in a housing that is easily carried by a single hand of a lay responder at the scene of an emergency, for example. In addition, the Examiner's assertion that Reinhold's apparatus is "easily carried by a single hand," is clearly not supported by Reinhold's disclosure. In fact, Reinhold's disclosure effectively teaches away from any such suggestion by providing the caster wheels 116 for enabling the heavy, bulky apparatus to be pulled along by its handle. For these reasons, the rejections of claim 11 and all of the

dependent claims over Reinhold in view of Hood and the other references of record are clearly in error and should be removed. Accordingly, favorable reconsideration of the application is respectfully requested.

Respectfully submitted,

By:           /wab/            
William A. Blake  
Reg. No. 30,548

JONES, TULLAR & COOPER, P.C.  
P.O. Box 2266, Eads Station  
Arlington, VA. 22202  
(703) 415-1500  
Dated: July 27, 2009

## EXHIBIT A

# Cylinder content: weight vs. pressure

## From My wiki

Cylinders stored on the back of anesthesia machines are E cylinders. The height of an E cylinder is 24.9 inches, the diameter of the base is 4.38 inches, and the empty weight is 5.90 kg. Both air and oxygen are stored as compressed gasses, and therefore the volume can be calculated if the pressure in the cylinder is known. In contrast, nitrous oxide is stored as both liquid and compressed gas. As vaporized nitrous leaves the cylinder, more nitrous is vaporized. Therefore, the pressure in the cylinder remains the same as long as there is any nitrous remaining in the cylinder. When the pressure begins to decrease, approximately 400 L of nitrous remain in the cylinder.

Characteristics of Compressed Gases stored in E sized Cylinders			
Characteristics	Oxygen	Nitrous Oxide	Air
Physical State	Gas	Liquid and Gas	Gas
Cylinder contents, L	625	1590	625
Cylinder Weight, empty, kg	5.90	5.90	5.90
Cylinder Weight, full, kg	6.76	8.80	(missing)
Cylinder Pressure, full, kg	2000	750	1800

There are many other sizes of oxygen cylinders available for medical use:

Table 1					
Aluminum Cylinder					
Specifications*					
Name	Dia. (")	H.t (")		Capac. (L)	Wt. (lb.)**
M-2	3.21	5.37	34	0.7	
A or M-4	3.21	8.4		113	1.6
B or M-6	3.21	11.6	164	2.2	
ML-6	4.38	7.68	165	2.8	
M-7	4.38	9.18	198	3.3	
C or M-9	4.38	10.7	255	3.7	
D or M-15	4.38	16.5	425	5.3	
E or M-24	4.38	24.9	680	7.9	
*Specifications vary slightly among manufacturers					
**Empty weight--without valve or oxygen					
Source: Catalina Cylinders at <a href="http://www.catalinacylinders.com">www.catalinacylinders.com</a>					

There are two classifications used. Cylinders may be labeled A-E (from smallest to largest), or may be labeled with an alpha-numeric designation (m for medical, followed by a number denoting the number of cubic feet of compressed gas contained in a cylinder). Larger cylinder (such as those that supply building supply) may be very large, but are still labeled in the same manner (H-cylinder is the most common). To convert cubic feet to liters, multiply by 28.33.

Retrieved from "[http://openanesthesia.org/index.php?title=Cylinder\\_content:\\_weight\\_vs.\\_pressure](http://openanesthesia.org/index.php?title=Cylinder_content:_weight_vs._pressure)"

Category: ABA Keywords

■ This page was last modified 13:27, 20 April 2009.

## EXHIBIT B



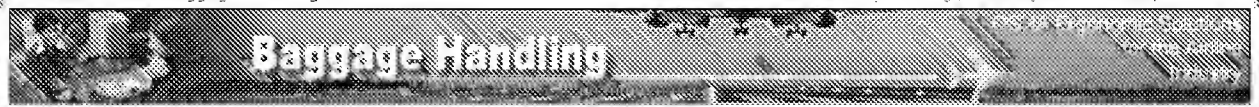
# UNITED STATES DEPARTMENT OF LABOR

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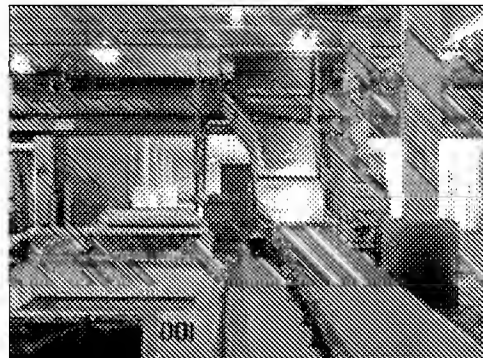
### Baggage Handling

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### Baggage Make-up Room

Agents who work in the baggage make-up room spend long hours on their feet. They must move baggage from conveyors to carts and baggage containers for transport to the plane. Conditions in the make-up room can be particularly stressful during peak times when baggage flow rates are at their highest. Controls can help reduce or eliminate make-up room injuries when using the following baggage sorting systems:

- [Flat Belt Carousel or Single Pier Belt](#)
- [Sloped Carousel Belt](#)
- [Double Deck Pier Belt](#)



See also hazards associated with [baggage carts or containers](#).


**Flat Belt Carousel or Single Pier Belt**
1 of 2

#### Potential Hazards


- Repetitively lifting baggage from the conveyor while assuming awkward body postures and extended reaches (Figure 1)
- Twisting the torso and keeping the feet stationary when lifting baggage between the conveyor and the cart
- Lifting heavy baggage
- Bending over and reaching farther for bags in order to work around curbs, railings, and bollards

#### Possible Solutions

- Educate agents about proper lifting techniques to increase awareness of good work practices.
- Perform stretching exercises that help loosen and relax the muscles and joints.
- Use both hands to handle baggage (Figure 2) and avoid lifting baggage by the handle to minimize lifting from awkward postures.



**Figure 1. Bending over to get baggage**



**Figure 2. Two-handed lift**

## EXHIBIT B

- Minimize twisting while lifting by
  - Keeping carts approximately 3 feet from belt (Figure 3), and
  - Parking the cart at an angle when space allows. (Figure 4)

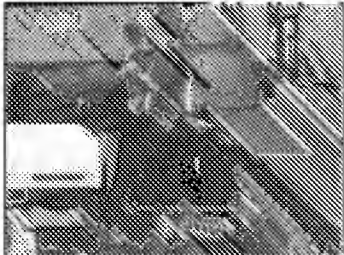


Figure 3. Keep carts approximately three feet from the belts to avoid repetitive lifting and twisting.

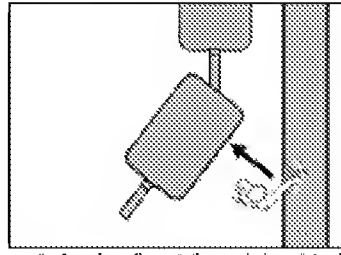


Figure 4. Angle of cart for minimal twisting

- Load heavy bags as close to the cart opening as possible to minimize force associated with extended reaches
- Use heavy baggage tags to create awareness of actual bag weights. (Figure 5)
- Raise the height of conveyors (29 to 33 inches high) to reduce bending and lifting

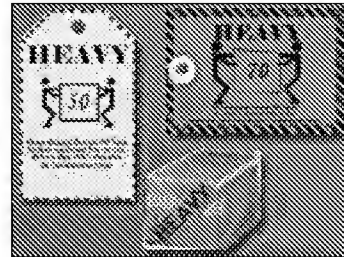


Figure 5. Heavy baggage tag examples

### Sloped Carousel Belt

#### Potential Hazards

- Reaching for baggage that has been double stacked
- Removing baggage that is jammed between the carousel lip and other baggage
- Twisting the torso and keeping the feet stationary when moving baggage between the conveyor and the cart
- Lifting heavy baggage
- Reaching farther for bags to work around curbs, railings, and bollards



Figure 6. Awkward lift

#### Possible Solutions

- Educate agents about proper lifting techniques to increase awareness of good work practices.
- Perform stretching exercises that help loosen and relax the muscles and joints.
- Keep bags from piling up on the lip of slope plate systems to avoid having to exert excessive force to free the baggage.

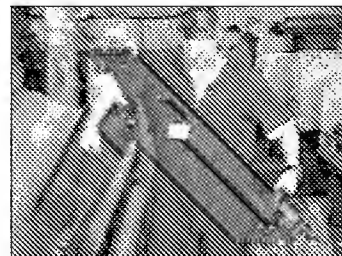


Figure 7. Carrying two bags at once

## EXHIBIT B

- Slide baggage close to you before lifting to avoid lifting with an extended reach.
- Minimize the distance between the belts and the railings/bollards to reduce extended reaches.
- Raise the carousel lip to minimize bending (preferably between 29 and 33 inches).
- Minimize the height of the front lip of the carousel to prevent handles from getting caught and to decrease the distance baggage is lifted over the lip.

### Double Deck Pier Belt

#### In Focus

The double deck pier system should not be installed in new or renovated make-up rooms. This section is to provide employees with information on how to work with their current baggage handling system.

#### Potential Hazards

- Repeated lifting of heavy bags from high locations, such as the top belt of a double deck pier system
- Repeated lifting with little recovery time between exertions because belt speeds are set too fast when there is a high flow of bags
- Extended reaching for a bag located at the back of a wide top belt (Figure 8)
- Bending and reaching under top belt for bags on the bottom belt
- Protruding objects from belt sides, such as "eyelets" through which emergency stop cords run



Figure 8. Extended reaching for a bag on the top belt

#### Possible Solutions

- Educate agents about proper lifting techniques to increase awareness of good work practices.
- Perform stretching exercises that help loosen and relax the muscles and joints.
- Use top belts that are 30 inches wide or less to reduce extended reaches.
- Limit the heights of top belts to under 50 inches (preferably 48 inches) and raise bottom belts as much as possible to minimize bending when retrieving baggage, being careful not to create a "head-strike" risk. (Figure 9)
- Using double deck pier belt systems may lead to more hazards than a single pier, flat, or sloped carousel belt system. If present investigate lowering upper tier to suggested height

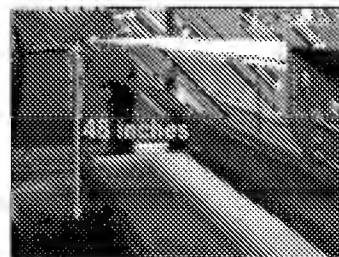


Figure 9. Heights of top belts should be under 50 inches (preferably 48 inches)

## EXHIBIT B

recommendations to reduce hazards. (Figure 9)

- Minimize distance between conveyors and railings/bollards to reduce reach distances.
- Have engineers "meter" the speed of the belt based on the type of baggage being unloaded so the agent is not unloading baggage at a rate that increases his/her chances of being injured.
- Minimize protrusions from belt sides to avoid injury to agents.

### Carts/Containers

#### Potential Hazards

- When loading or unloading a cart, avoid:
  - Reaching away from the body or above shoulder height (Figure 10)
  - Handling heavy bags
  - Lifting bags over front rails or guards
  - Twisting the body during baggage transfer
- Manually repositioning loaded carts
- Opening and closing curtains on carts

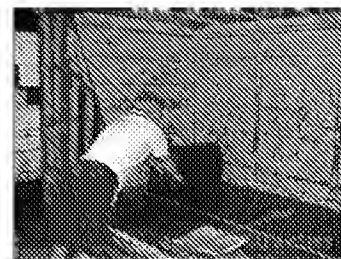


Figure 10. Reaching to the back of a cart can cause back and shoulder strain

#### Possible Solutions

- Educate agents about proper lifting techniques to increase awareness of good work practices.
- Perform stretching exercises that help loosen and relax the muscles and joints.
- If space allows, park carts on an angle to minimize twisting motions. (Figure 11)
- If required to reach, grab the bag by the handle and slide it to the front of the cart; lifting baggage with the arms extended increases the risk of back and shoulder injury.
- Conduct preventative maintenance inspections, such as
  - Proper tire inflation
  - Lubrication for curtains
  - Brake tests
- Avoid stacking bags above shoulder height in open carts to prevent overhead reaches that can strain the neck, shoulders, and back.
- Move carts using powered equipment whenever possible.
- If carts must be manually positioned, push them instead of pulling them and get help from at least one other person.

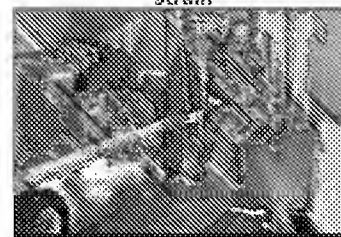


Figure 11. Park carts on an angle to minimize the angle of twist



Figure 12. Baggage container



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## Baggage Allowance

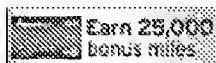
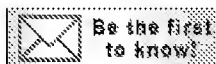
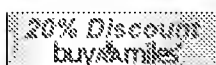
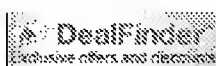
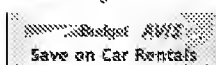
### Important Travel Reminders

#### Important Changes To Checked Bag Charges

View new checked bag charges for customers who purchase domestic Economy Class tickets on or after August 14, 2009.

[Dimensions, Weight and Number of Pieces](#) | [Baggage Charges](#) | [Overweight/Oversize Baggage](#)  
[Specialty Items](#) | [Sports Equipment](#) | [Transportation of the Deceased](#)

#### Featuring:



### Checked Bag Charges

Customers who purchase domestic economy class tickets will be charged \$15 each way for the first checked bag and \$25 each way for the second checked bag. Exceptions to this policy include customers who purchase First or Business Class tickets, AAAdvantage Executive Platinum®, AAAdvantage Platinum® and AAAdvantage Gold® members as well as customers who purchase full-fare tickets in Economy Class. [View a complete list of exceptions.](#)

### Dimensions, Weight and Number of Pieces

Itinerary	Number of Bags Allowed*	Size Per Piece Allowed*
Flights within the United States, the U.S. Virgin Islands, Puerto Rico and Canada	One bag carry-on. No charge Checked bags. <a href="#">Charges apply.</a>	45 in/114 cm (carry-on) 62 in/157 cm (checked)*
Travel to/from Brazil	One bag carry-on. No charge Two bags checked. No charge	45 in/114 cm (carry-on) 62 in/157 cm (checked)
Travel to/through/from Europe	One bag carry-on. No charge Two bags checked. No charge	45 in/114 cm (carry-on) 62 in/157 cm (checked)
View European Union rules on <a href="#">Restricted Items</a> related to animal products.		
Travel to/through/from Asia	One bag carry-on. No charge Two bags checked. No charge	45 in/114 cm (carry-on) 62 in/157 cm (checked)
Other International Travel	One bag carry-on. No charge Two bags checked. No charge	45 in/114 cm (carry-on) 62 in/157 cm (checked)

The size limitation of your luggage is calculated by adding the total outside dimensions of each bag, that is, length + width + height.

\*Bags over the size or weight allowance will incur additional [charges](#). See below for [Specialty Items](#).

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### Baggage Charges



#### Maximum Weight Per Piece\*

The combined weight of the carry-on bag and personal item may not exceed 40 lbs/18 kgs.

50 lbs/23 kgs. (checked)\*

40 lbs/18 kgs. (carry-on)  
70 lbs/32kg (checked)

40 lbs/18 kgs. (carry-on)  
50 lbs/23 kgs (checked)

Over 50 lbs/23 kgs but less than 70 lbs/32 kgs - is subject to a \$50 USD overweight baggage charge (Maximum of three excess pieces will be accepted.)

Over 70 lbs/32 kgs - will not be accepted

40 lbs/18 kgs. (carry-on)  
50 lbs/23 kgs (checked)

Over 50 lbs/23 kgs but less than 70 lbs/32 kgs - is subject to a \$50 USD overweight baggage charge (Maximum of three excess pieces will be accepted.)

71 lbs/32 kgs - 100 lbs/45.5 kg is subject to a \$450 USD charge.

40 lbs/18 kgs. (carry-on)  
50 lbs/23kg (checked)

## EXHIBIT C

**Itinerary**

Flights within the United States, the U.S. Virgin Islands, Puerto Rico and Canada

All other itineraries

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**Baggage Charges**

\$15 for the first checked piece. Exceptions may apply.  
 \$25 for the second checked piece. Exceptions may apply.  
 \$100 per piece for the 3rd, 4th and 5th checked bags  
 \$200 per piece for the 6th checked bag and any additional pieces

Vary by destination. Contact Reservations for charges or seasonal restrictions

**Overweight/Oversize Baggage Charges**

Additional charges apply to this type of baggage and are collected at the airport ticket counter.

**Itinerary**

Flights within the United States, the U.S. Virgin Islands, Puerto Rico and Canada

All other itineraries

**Overweight Baggage Charges**

Checked baggage weighing over 50 lbs/23 kgs but not more than 70 lbs/32 kgs will be charged at the rate of \$50 per piece.

Checked baggage weighing over 70lbs/32 kgs but not more than 100 lbs/45 kgs will be charged at the rate of \$100 per piece.

Baggage weighing more than 100 lbs/45 kgs will not be accepted as checked baggage.

Vary by destination. Contact Reservations for charges or seasonal restrictions

**Oversize Baggage Charges**

Checked baggage which is larger than 62 in/157 cm will be charged at the rate of \$150 per piece.

Baggage measuring more than 115 in/292 cm will not be accepted as checked baggage.

Vary by destination. Contact Reservations for charges

The size limitation of your luggage is calculated by adding the total outside dimensions of each bag, that is, length + width + height.

Certain aircraft types cannot accept some oversized articles due to the dimensions of the cargo doors. If you are traveling with an oversized article, please contact an American Airlines representative to ensure your destination is typically served by an aircraft that can accommodate your article.

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**Specialty Items**

There are exceptions, special rules, and/or packing instructions that apply to some specialty items. Examples of these include duffel bags used by military personnel and certain musical instruments. To determine if your item has special charges, please contact an American Airlines representative at 1-800-433-7300.

**Audio/Visual Equipment**

Camera, film, lighting, and sound equipment (up to a maximum of 115 in/292 cm and 100 lbs/45 kgs) will be charged a rate of \$50.00 per piece when tendered by representatives of network or local television broadcasting companies, commercial film-making companies, professional photographers, the federal government, Department of Defense or the American Society of Media Photographers. These rates apply to travel within the U.S., Canada, Puerto Rico and the U.S. Virgin Islands.

**Firearms/Ammunition**

View the rules and regulations for transporting firearms and ammunition on flights within the U.S. For information on transporting these items internationally, please contact Reservations.

**Musical Instruments**

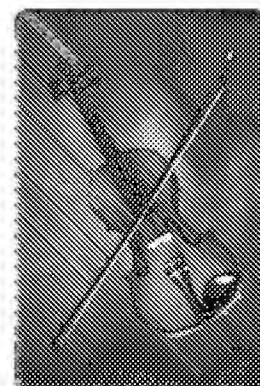
Small musical instruments may be carried onboard the aircraft providing they meet existing carry-on size requirements and fit in the overhead bin or under the seat in front of you. Case dimensions may not exceed 45 dimensional inches (width + length + height), except for guitars which may be brought on board only if they can be safely stowed in an overhead bin or approved stowage location in the cabin. The instrument is considered the passenger's one allowed carry-on bag. A personal item is allowed in addition to the instrument. See Carry-On Allowance for more information.

If an instrument is too large to fit in the carry-on baggage space, an additional seat may be purchased. In this case, an instrument must travel in a window, bulkhead seat, with the customer in the adjoining seat. Due to their size Bass Fiddles are not accepted in the coach cabin and are only accepted on certain aircraft types, please contact an American Airlines representative at 1-800-433-7300.

Instruments may also be transported as checked baggage, however, due to their fragile nature AA does not accept liability for damages and has limited liability for loss. AA is also not liable for any damage to checked musical instruments not presented in a hard-sided case. If the outside of the hard-sided case does not have visible damage, AA is not liable for any damage to the musical instrument inside the case.

**Military Baggage**

- Active U.S. Military personnel are allowed to check three pieces of baggage free of charge.\*
- Each checked bag in the free allowance may be up to 62 inches and weigh up to 50 lbs. The size limitation of your luggage is calculated by adding the total outside dimensions of each bag, that is, length + width + height.
- Active U.S. Military personnel traveling on orders are allowed one bag in the free allowance up to 100 lbs. and 115 inches. The second and third bag are free of charge up to 50lbs. and 62 inches. Travel orders must be presented when



## EXHIBIT C

checking the bag.

- The 70 lb. maximum bag weight limit for Europe and Asia does not apply for U.S. military baggage if traveling on orders.
- Military ID must be presented. Traveling in uniform is not required.

\* Exception - Due to aircraft size and flight frequency, any U.S. military customers traveling from Wichita Falls, TX (SPS) and Lawton, OK (LAW) will be allowed two bags free of charge. One bag may be up to 50 lbs and 62 dimensional inches and the second bag may be up to 100 lbs and 115 dimensional inches. The third free bag does not apply.

#### Mobility Devices

Wheelchairs/scooters, braces or other assistive devices are accepted free of charge as checked baggage and are in addition to the normal checked baggage allowance. There are special handling procedures for motorized equipment. Please contact an American Airlines representative at 1-800-433-7300 for detailed information.

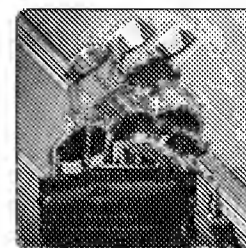
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#### Sports Equipment

The following guidelines for sports equipment being transported on American are effective for travel within the United States, Puerto Rico and the U.S. Virgin Islands.

##### Maximum Size and Weight

- Items that exceed the maximum allowable size and/or weight will be subject to applicable oversize and/or overweight charges.
- Items that are larger than 115 inches and 100 lbs. will not be accepted as checked baggage. Contact a freight forwarder for assistance with these items.
- Additional items not included in the item description below must not be packed inside the sports case and are subject to overweight and/or oversize charges.
- All inches are dimensional inches (length + width + height)



##### Charges

- Charges listed are in U.S. Dollars
- For information related to travel outside of United States, Canada, Puerto Rico and USVI, please contact Reservations.

##### Liability

- AA/American Eagle/AmericanConnection® carrier are not liable for any damage to sports items not presented in a hard-sided case. If the outside of the hard-sided case does not have visible damage, AA/American Eagle/AmericanConnection® carrier are not liable for any damage to the sports item inside the case.
- Sports cases designed for specific items such as golf bags, boot bags and bike cases are intended to carry only that sports item.

Item	Allowance/Requirements	Cost	Maximum Size and Weight	Additional Information
Antlers	Must be as free of residue as possible. The skull must be wrapped and tips protected.	\$100 in addition to the applicable checked baggage charge, based on the number of checked bags.	70 lbs 115 inches	- Acceptance conditional on aircraft size and load conditions - Passengers must make all arrangements and assume full responsibility for complying with any applicable laws, customs, and/or other governmental regulations, requirements or restrictions of the county, state, or territory to/from which the antlers are being transported.
Archery	One bow, one quiver, arrows and maintenance kit	Charged the applicable checked bag charge for the 1st or 2nd checked bag. When in excess, each item will be subject to the <u>baggage charge</u> for a single piece.	50 lbs 62 inches	
Backpack/ Knapsack/	One Backpack/knapsack with or without frame	Charged the applicable checked bag charge for the 1st or 2nd checked bag. When in excess, each item will be subject to the <u>baggage charge</u> for a single piece.	50 lbs 62 inches	
Bicycles	One non-motorized touring or racing bike. Handlebars must be fixed sideways and pedals removed. Or pedals and handlebars must be enclosed in plastic foam or	\$100 in addition to the applicable checked baggage charge, based on the number of checked bags. <b>Exception:</b> If bicycle and container are less than 62	70 lbs 115 inches	- Acceptance conditional on aircraft size and load conditions - Exception: If a bike is less than 62 dimensional inches and 50 lbs., the above

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	similar material.	dimensional inches and under 50 lbs., the bike is charged the applicable baggage charge for the 1 <sup>st</sup> checked bag.		conditions do not apply
<b>Boogie / Skim / Speed Boards</b>	One boogie, skim or speed board	Charged the applicable checked bag charge for the 1st or 2nd checked bag. When in excess, each item will be subject to the <u>baggage charge</u> for a single piece.	50 lbs 62 inches	
<b>Bowling Balls</b>	Bowling case with bowling balls and shoes	Charged the applicable checked bag charge for the 1st or 2nd checked bag. When in excess, each item will be subject to the <u>baggage charge</u> for a single piece.	50 lbs 62 inches	- Bowling ball cleaners that contain high amounts of Acetone or alcohol over 70% in volume are considered dangerous goods and will not be allowed in checked or carry-on baggage.
<b>Camping Equipment</b>	One piece of camping equipment	Charged the applicable checked bag charge for the 1st or 2nd checked bag. When in excess, each item will be subject to the <u>baggage charge</u> for a single piece.	50 lbs 62 inches	- Camping stove fuels, Sterno, matches, lighters and flares are considered dangerous goods and are not allowed in checked or carry-on baggage.
<b>Fishing</b>	Two rods and one reel contained in a case and one bag with fishing tackle, landing net and fishing boots.	Two pieces - Fishing rod case and fishing equipment bag are charged the applicable checked bag charge for the 1st or 2nd checked bag. When in excess, each item will be subject to the <u>baggage charge</u> for a single piece.	Fishing rod case 50 lbs. 115 inches Equipment bag 50 lbs. 62 inches	For purposes of excess baggage, two pieces count as one item
<b>Golf Clubs</b>	One golf bag containing no more than 14 golf clubs, 12 golf balls and one pair of golf shoes	Charged the applicable checked bag charge for the 1st or 2nd checked bag. When in excess, each item will be subject to the <u>baggage charge</u> for a single piece.	Maximum free weight on golf clubs is 70 lbs. Size is limited to the size of a hard-sided golf case.	- Swingless Golf Club load strips are considered dangerous goods and are not allowed in checked or carry-on baggage.
<b>Hangliders</b>	One hanglider	\$100 in addition to the applicable checked baggage charge, based on the number of checked bags.	70 lbs 115 inches	- Acceptance conditional on aircraft size and load conditions
<b>Hockey/ Lacrosse</b>	Hockey/Lacrosse sticks and one equipment bag	Two pieces - Equipment bag plus Hockey/Lacrosse stick(s) are charged the applicable checked bag charge for the 1st or 2nd checked bag. When in excess, each item will be subject to the <u>baggage charge</u> for a single piece.	Equipment bag up to 50 lbs. and 62 inches plus Hockey/Lacrosse stick(s)	For purposes of excess baggage, two pieces count as one item
<b>Javelin</b>	One javelin	\$100 in addition to the applicable checked baggage charge, based on the number of checked bags.	70 lbs 115 inches	- Acceptance conditional on aircraft size and load conditions
<b>Kayak, Boats, Sculls, Canoes</b>	Not accepted.			
<b>Oars</b>	One pair of oars	Charged the applicable checked bag charge for the 1st or 2nd checked bag. When in excess, each item will be subject to the <u>baggage charge</u> for a single piece.	50 lbs 62 inches	
<b>Pole Vault</b>	Not accepted.			
<b>Scuba Gear (with tanks)</b>	One scuba tank, scuba regulator, tank harness and tank pressure gauge.	\$100 in addition to the applicable checked baggage charge, based on the number of checked bags.	70 lbs	Regulator valve must be completely disconnected from the cylinder and the cylinder must have an opening to allow for a visual inspection inside.
<b>Scuba Gear (without tanks)</b>	Scuba regulator, tank harness and tank pressure gauge.	Charged the applicable checked bag charge for the 1st or 2nd checked bag.	50 lbs 62 inches	

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		When in excess, each item will be subject to the <u>baggage charge</u> for a single piece.		
<b>Shooting Equipment</b>	Maximum amount per case is three rifles/shotguns or five pistols/revolvers 11 lbs/5 kgs ammunition, shooting mat, noise suppressors, and tools.	Charged the applicable checked bag charge for the 1st or 2nd checked bag. When in excess, each item will be subject to the <u>baggage charge</u> for a single piece.	50 lbs 62 inches	Please visit our <a href="#">Transporting Firearms And Ammunition</a> page for more information.
<b>Skateboard</b>	One skateboard	Charged the applicable checked bag charge for the 1st or 2nd checked bag. When in excess, each item will be subject to the <u>baggage charge</u> for a single piece.	50 lbs 62 inches	
<b>Skis Water / Snow / Snowboards</b>	One pair of skis/snowboard and one bag containing a pair of ski /board boots only	Two pieces - Ski/board boot bag and one pair of skis/snowboard are charged the applicable checked bag charge for the 1st or 2nd checked bag. When in excess, each item will be subject to the <u>baggage charge</u> for a single piece.	- Ski/board boot bag up to 50 lbs. and 62 inches - One pair of skis/snowboard up to 115 inches	- Lighters or torches for applying ski wax are considered dangerous goods and are not allowed in checked or carry-on baggage
<b>Surfboards, Kiteboards, Wakeboards, Wave Ski</b>	One surfboard, Kiteboard, Wakeboard, or Wave Ski	\$100 in addition to the applicable checked baggage charge, based on the number of checked bags. <b>Exception:</b> Kiteboard/wakeboard/wave skis that are less than 62 dimensional inches and 50 lbs. are only subject to the applicable checked baggage charge, based on the number of checked bags.	70 lbs 115 inches	- Acceptance conditional on aircraft size and load conditions - Exception: If the Kiteboard/wakeboard/Wave ski is less than 62 dimensional inches and 50 lbs., the above conditions do not apply
<b>Tennis Rackets</b>	Tennis Rackets and tennis balls	Charged the applicable checked bag charge for the 1st or 2nd checked bag. When in excess, each item will be subject to the <u>baggage charge</u> for a single piece.	50 lbs 62 inches	
<b>Tent/Sleeping Bag</b>	One tent with frame or one sleeping bag	Charged the applicable checked bag charge for the 1st or 2nd checked bag. When in excess, each item will be subject to the <u>baggage charge</u> for a single piece.	50 lbs 62 inches	
<b>Windsurf, Kitesurf</b>	One board, one mast, boom and sail	\$100 in addition to the applicable checked baggage charge, based on the number of checked bags. Can be two pieces	70 lbs. 115 inches each piece	- Acceptance conditional on aircraft size and load conditions - Up to three pieces (as described at left) count as one piece for baggage charges.

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#### Transportation of the Deceased

The Jim Wilson Desk at AA Cargo (1-800-228-7878) handles the transportation of your deceased loved ones, in coordination with a funeral home/director. Our Passenger Reservations personnel (1-800-433-7300) will make travel arrangements for any escort accompanying uncremated remains.

#### Cremated Remains

Cremated remains traveling with a passenger are handled in the same manner as carry-on baggage. No special documents are required for travel within the United States. For international travel, refer to that country's consulate and/or burial advisor.

#### Crematory Containers

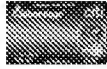
Certain crematory containers such as urns are unable to be screened at security checkpoints by the Transportation Security Administration (TSA). An American Airlines airport agent may consult TSA personnel to determine if your container may be transported as carry-on or checked baggage. Please seek guidance from a funeral home to help determine if a particular crematory container will pose any difficulty at a TSA screening point.

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PREVENTEX

Association  
paritaire du textile

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Stéphane Patenaude MSc  
Ergonomist - ACE Member**Introduction****Ergonomic standards****Factors for  
ergonomic  
evaluation of manual  
handling tasks****A practical example****Possible solutions****Conclusion****Bibliography**

# Préventex

## MANUAL HANDLING: Not Only a Matter of Weight

### Introduction

People responsible for health and safety in the workplace are often in the dark as to the proper way to evaluate handling tasks. They ask themselves questions such as: What is the maximum load that can be lifted without injury? Are there standards applicable to hazardous loads?

Standards have been set to "quantify" physiological limits but other aspects remain unclear like the exact link between bad posture and injuries. The established standards, however, are useful used to evaluate the risks associated with specific work stations or tasks. If work requirements fall below the set limits, the risk level is fairly low; conversely, the risk of injuries increases as the limits are exceeded.

### Ergonomic standards

Ergonomic standards are applied to varying degrees. Following is a list of the standards most widely used by ergonomists.

- ISO Standard 11228-1
- MMH
- National Institute for Occupational Safety and Health (NIOSH) equation

These standards establish maximum loads for manual handling tasks performed under optimal conditions (see Figure 1). In other words, the standards determine the maximum weight that can be safely lifted by workers. The values need to be adjusted according to five main factors affecting workers' health and safety:

- lifting duration (work-time / recovery-time)
- lifting frequency
- properties of load
- working environment
- posture of worker

Figure 1: **Maximum load weight under optimal conditions**

Standard*	Maximum load weight (kg)	Comments
ISO 11228-1	25	Load can be handled by 95 % of men and 70 % of women.
MMH	27	Load can be handled by 90 % of men. Maximum load for women is 20 kg.
NIOSH	23	Load can be handled by 90 % of the population (men and women).

\* International Standard Organization (ISO), May 2003. *Ergonomics - Manual handling. Part 1: Lifting and carrying. ISO 11228-1.*

Mital, A., Nicholson, A.S., and Ayoub, M.M. *A guide to manual materials handling (MMH). Second Edition. Taylor & Francis. 1997.*

Winter, T.R., Putz-Anderson, V., Garg, A., and Fine, L.J. *Revised NIOSH equation for the design and evaluation of manual lifting tasks. Ergonomics. 1993, 36 (7), 749-776.*

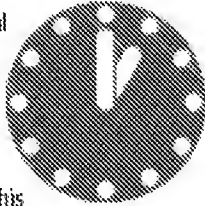


# MANUAL HANDLING

## Factors for ergonomic evaluation of manual handling tasks

### Lifting duration

In the assessment of a work station involving manual handling, it is crucial to take into account the period of time taken by workers to complete the task. The longer this time is, the higher the degree of fatigue (Asfour and Titar, 1991). Factors such as the frequency and duration of recovery-time also affect fatigue levels and can reduce the impact of other factors such as the total duration of work and the lifting frequency per minute. Periods of recovery-time allow workers to compensate for the fatigue caused by repetitive handling tasks, and make it easier for workers to sustain their work load.



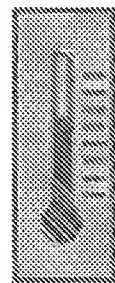
### Lifting frequency

The second factor is the frequency of handling tasks, measured in number of lifts per minute. This element is factored into the evaluation of the consequences of load weight and lifting duration on worker fatigue. The load itself is not the only consideration and the number of manual handling operations performed within a set period of time should also be taken into account (lifting frequency). The combined effects of load weight and lifting frequency directly affect worker fatigue (Genaïdy, 1989, Asfour, 1991 and Stålhammar, 1996). In addition, increases in lifting frequency diminish the worker's capacity to assess loads (Karkowski, 1992). Workers who are unable to estimate loads correctly will not apply appropriate muscular effort and will tire more easily than if they had evaluated the load correctly (Patenaude, 1997).

### Properties of the load

Third, the specific properties of the load should be taken into consideration because they affect the way the charge is handled. The weight of the load is one example. Another is the location of the load: picking up loads from an elevated area is more likely to cause fatigue (Genaïdy, 1989, et Water, 1993). In addition, heavier loads increase the risk of musculoskeletal injuries (Water, 1993, et Hidalgo, 1997). The grip on the load is another important feature of the load. The grip is a function of the shape, texture (friction rate) and balance of the load. Workers have to exert greater force to handle loads with a poor grip in a safe way. For example, handles make boxes much easier to handle (Stålhammar, 1989).

### Working environment



The fourth factor relates to the working environment. This includes the layout of work areas (height of surface where load is picked up and deposited), distances covered with and without load, features of circulation areas (stairs, graded surface, elevators, etc.) temperature and humidity rate. These variables directly affect the level of difficulty associated with manual handling tasks (Waters, 1993, et Hidalgo, 1997).

### Worker posture

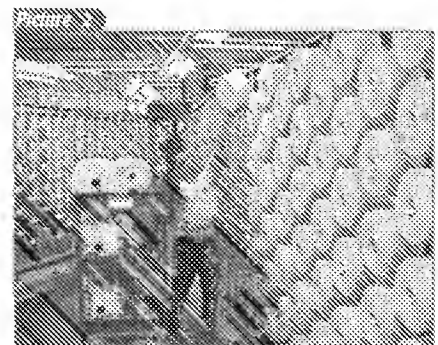
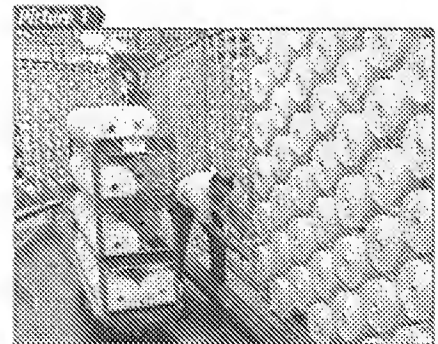
The fifth and final element is the posture adopted by workers to carry out handling operations. The physical strength required to perform the task increases along with the distance between the center of gravity of the load and that of the worker. Excessive distances also cause intervertebral disks to



compress, increasing the risk of lower back injuries (Chaffin, 1999).

## A practical example

Here is an illustration of a manual handling task performed typical of the textile industry, where a worker is lifting and stacking cones on a rack. Depending on the specific type of rack, the worker lifts cones to heights varying between 25cm and 200cm from the floor. Performing this task forces the worker to adopt extreme postures (see pictures 1 and 2). The handling frequency is 120 cones per hour for an eight-hour work shift (2 cones per minute). Including recovery-time, this means that the task is performed over a seven-hour period. Cones weigh 14kg each.



The ergonomic evaluation of the task reveals that this is a hazardous operation: according to the five factors affecting worker health and safety, the maximum weight should be 12kg.

**27 kg**

Maximum weight load set by the MMH under optimal conditions

### Actual situation

- Lifting duration: 8 hours of work (including 1 hour of recovery-time)
- Lifting frequency: 120 cones per hour
- Properties of the load: weight 14 kg, shape, size, quality of grip
- Working environment: height of pick up and deposit, location of cart
- Posture of worker: trunk bent, shoulders bent over 90°

**12 kg**

Maximum weight load set by MMH considering actual conditions

### Possible solutions

Once the evaluation has been completed, corrective measures should be taken. Here are some suggestions.

#### Improvements to tools and working environment

- Use a platform to install the cones, tie wires to the higher sections of the rack.
- Modify the rack to reduce the surface of the work area, by eliminating the lower and higher shelves of the rack.

#### Improvements to the organization of work

- Use lighter cones or lower lifting frequency.
- Reduce the duration of the stacking operation to lower the lifting frequency. If the total amount of handling time is reduced, the worker will be able to handle heavier loads.
- Eliminate unnecessary handling operations: transferring cones to the cart increases the lifting frequency so the original packaging should be used as often as possible.

#### Improvements to work methods

- Eliminate the need to use the pliers method for handling cones, because this technique requires greater muscular strength. If the cones are handled properly, workers will be able to handle heavier loads in a safe way.
- Provide training on proper work methods. Posture is directly related to lower back injuries and workers should be given information on appropriate body positions.

### Conclusion

When evaluating manual handling tasks, it is important to **take into consideration a full range of factors**. Following the initial assessment, use applicable standards to determine **potential hazards**. Recommendations are then issued to reduce the risk factors. The impact of recommendations can be determined by using the set standards. If the assessment reveals that standards are being respected, apply the recommendations. Préventex can assist with the evaluation of handling tasks, for instance by sending a specialist to analyze the situation and suggest appropriate solutions. Recommendations aim to lower the constraints noted and can help develop tailored solutions. Workers and production managers are consulted prior to the implementation of any suggestions. They may also wish to develop their own set of corrective measures; these should be validated by a specialist in ergonomics to ensure they are appropriate.

# MANUAL HANDLING

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Association  
paritaire du textile

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Préventex - Association paritaire du textile  
3035, Victoria avenue, suite 203  
Saint-Lambert QC J4S 1H1  
Telephone: (450) 671-6925  
Fax: (450) 671-9267  
e-mail: [info@preventex.qc.ca](mailto:info@preventex.qc.ca)

**General manager and  
newsletter editor:** Michel Rouleau

**Co-chairman (Employers):**  
Donald Bélisle  
PCI / Orlco Issues de performance

**Co-chairman (Unions):**  
Pierre-Jean Olivier  
TUAC/COUTA

**Coordination:** Lise Laplante

**Copy editor:**  
Pierre Bouchard  
INDICO Communication

**Translation:** Paule Champoux-Blair

**Graphic design:** Passerelle bleue

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